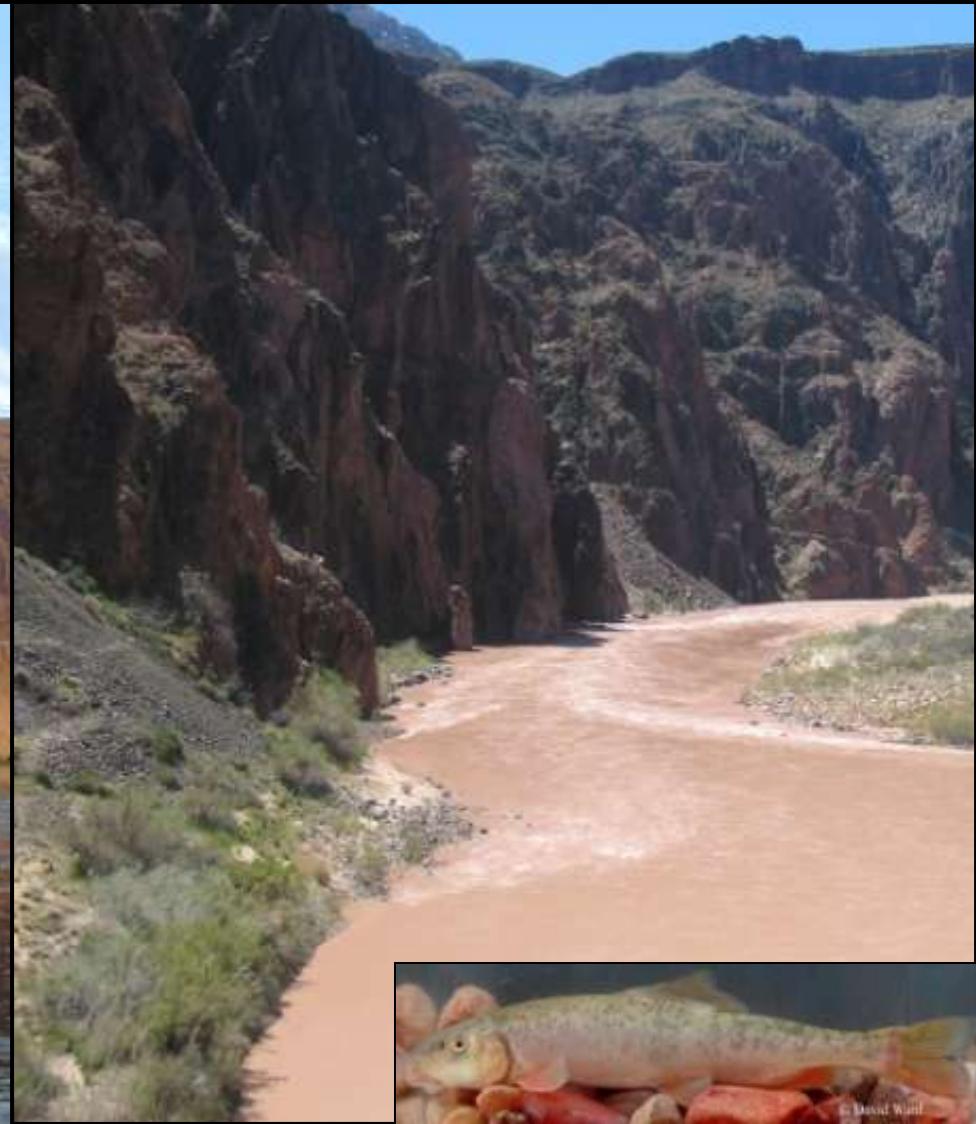




# Lees Ferry and Mainstem Fish Monitoring



# Lees Ferry Fish Monitoring

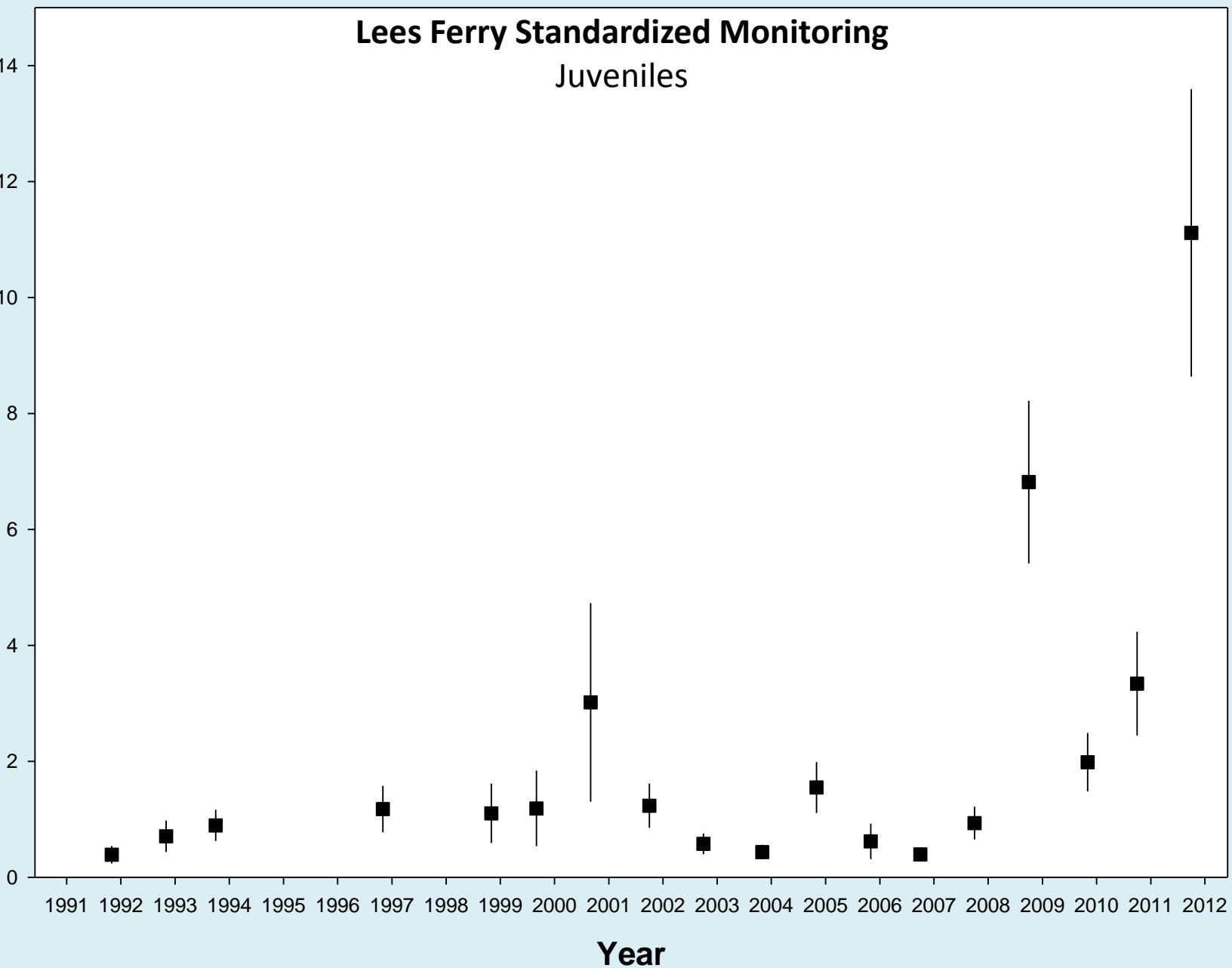
- AGFD conducts 3 electrofishing surveys
  - Spring (April), Summer (July), and Fall (October)
  - 36 randomly selected transects
- Rare nonnative surveillance
  - Occurs during summer trip
  - 12 locations identified areas which rare species may inhabit
    - Below GCD spillway, spring inflows, large backwater (slough area), and other smaller backwater features
- Creel surveys
  - Two-stage non-uniform probability design
  - Angler catch rates, preferences, and satisfaction



# Lees Ferry Standardized Monitoring

## Juveniles

Rainbow trout <152 mm (fish/min.)



# Lees Ferry Standardized Monitoring

Juveniles < 152 mm

Fall Trip

Rainbow trout <152 mm (fish/min.)

14

12

10

8

6

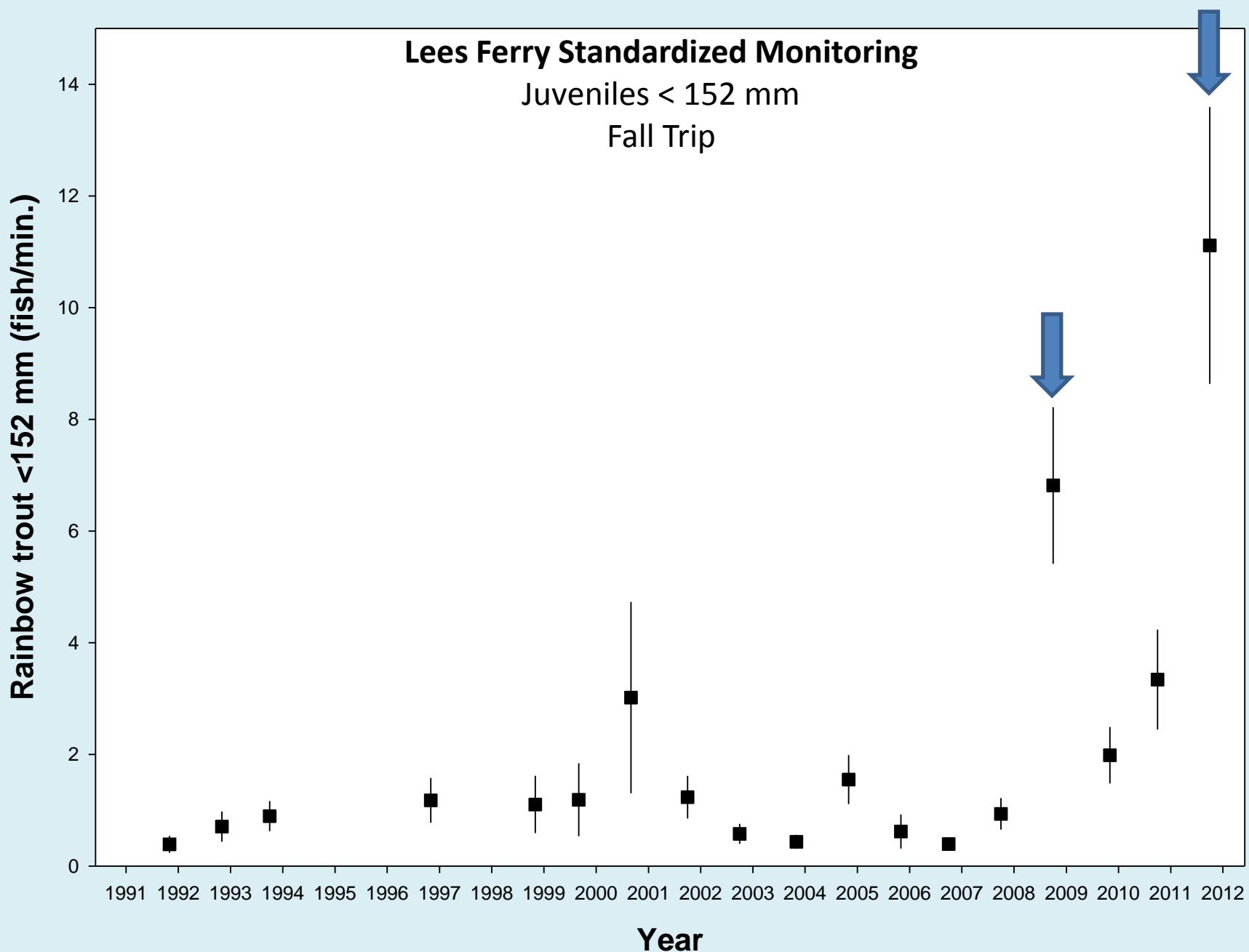
4

2

0

1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

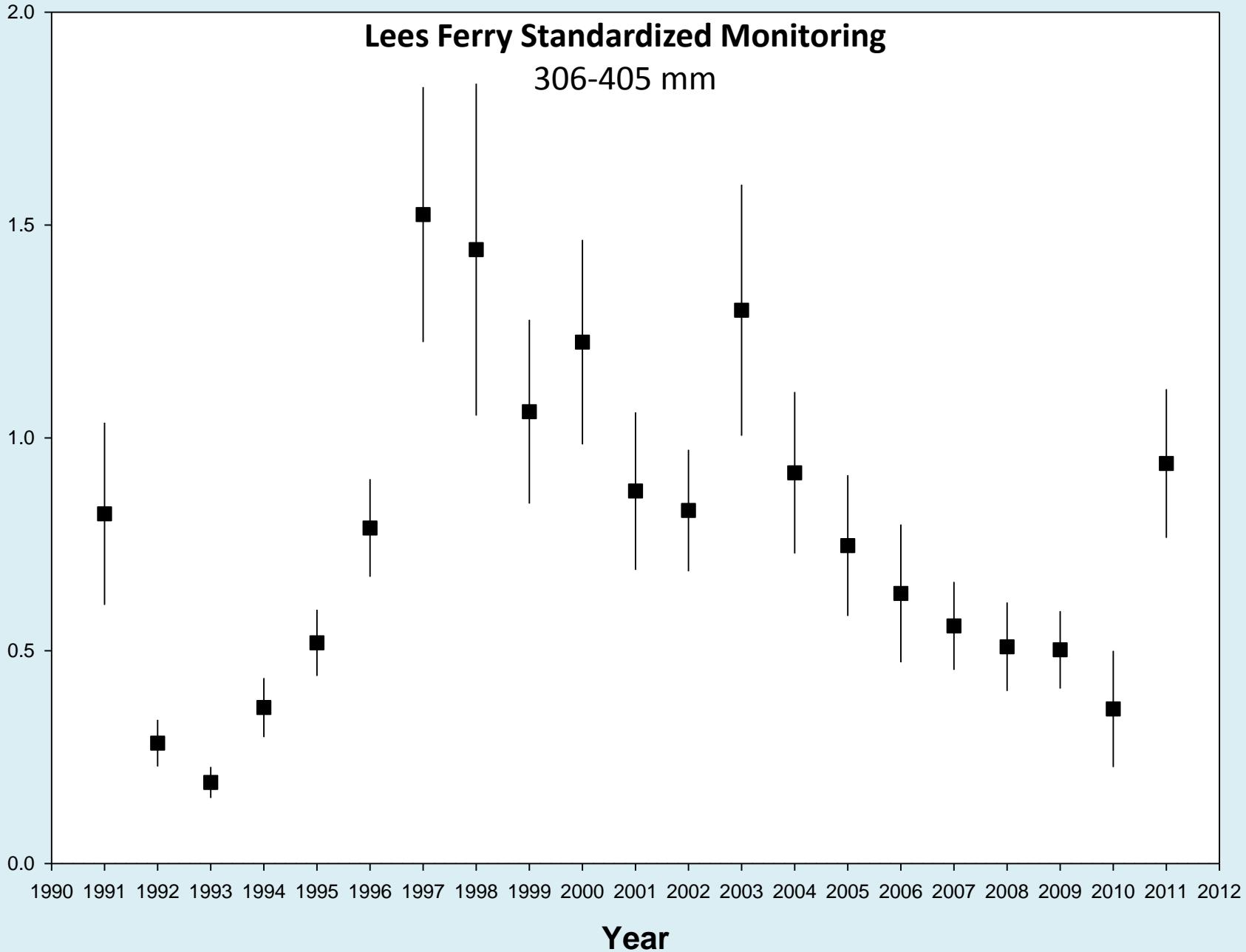
Year



## Lees Ferry Standardized Monitoring

306-405 mm

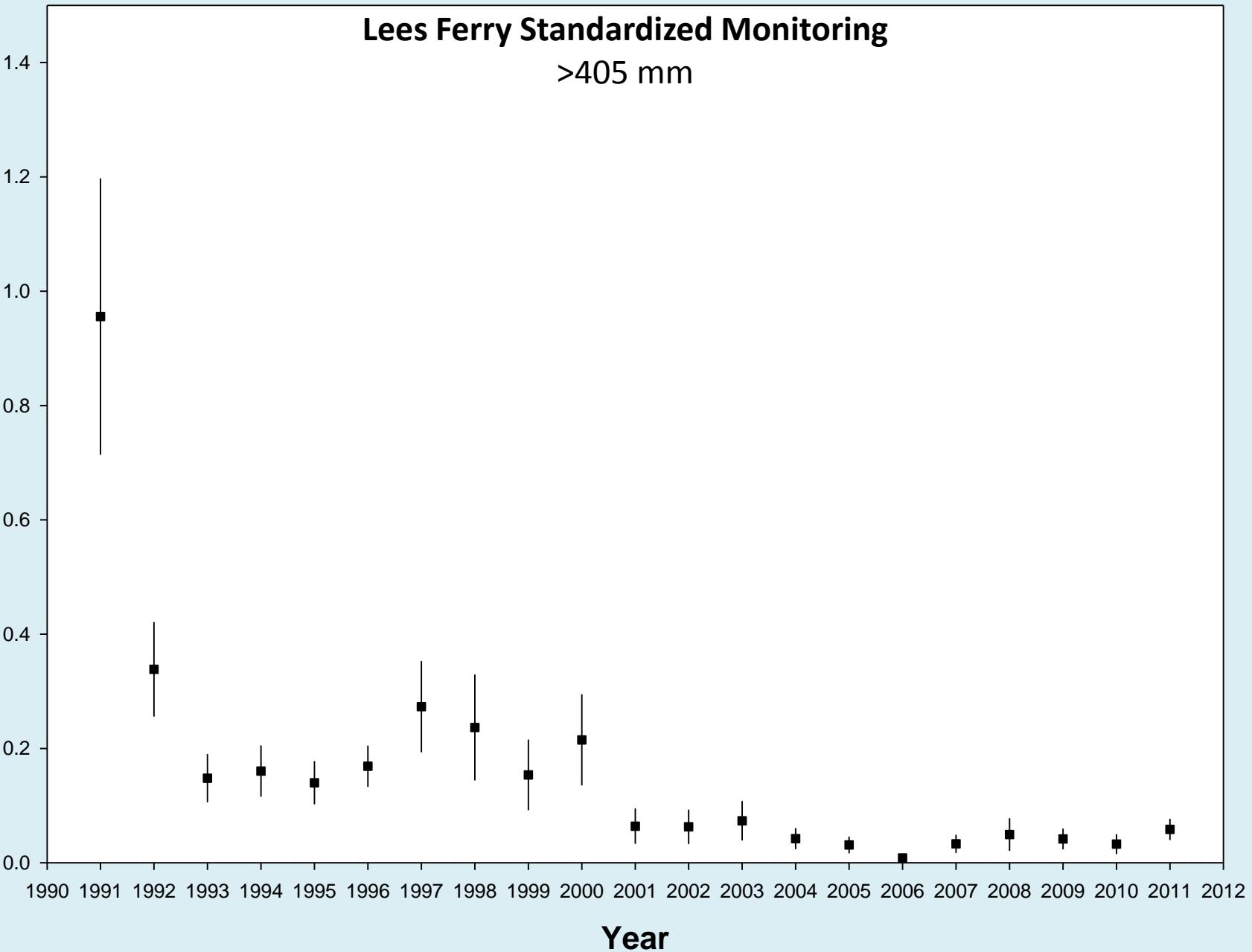
Rainbow trout 306-405 mm (fish/min.)

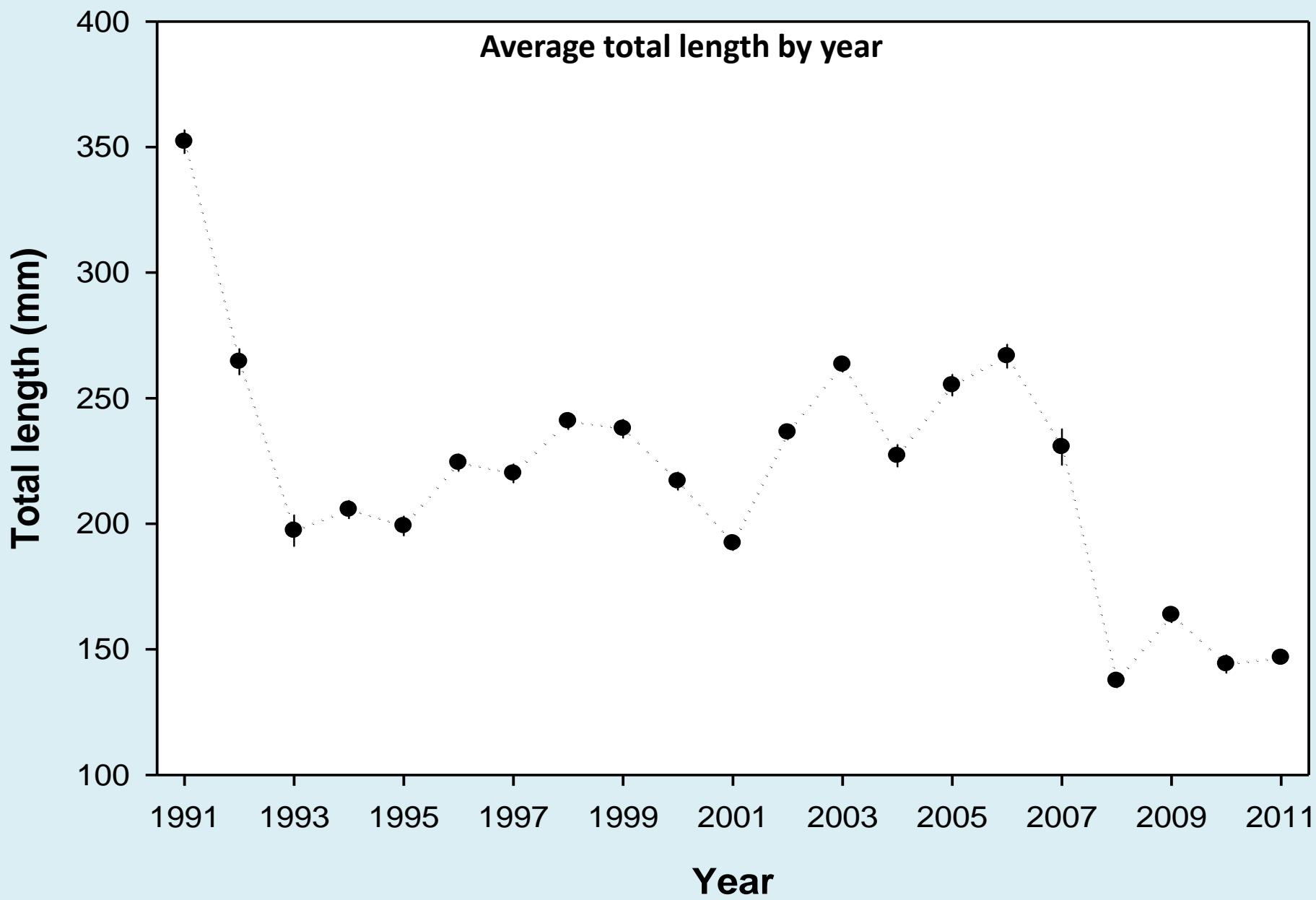


## Lees Ferry Standardized Monitoring

>405 mm

Rainbow trout >405 mm (fish/min.)



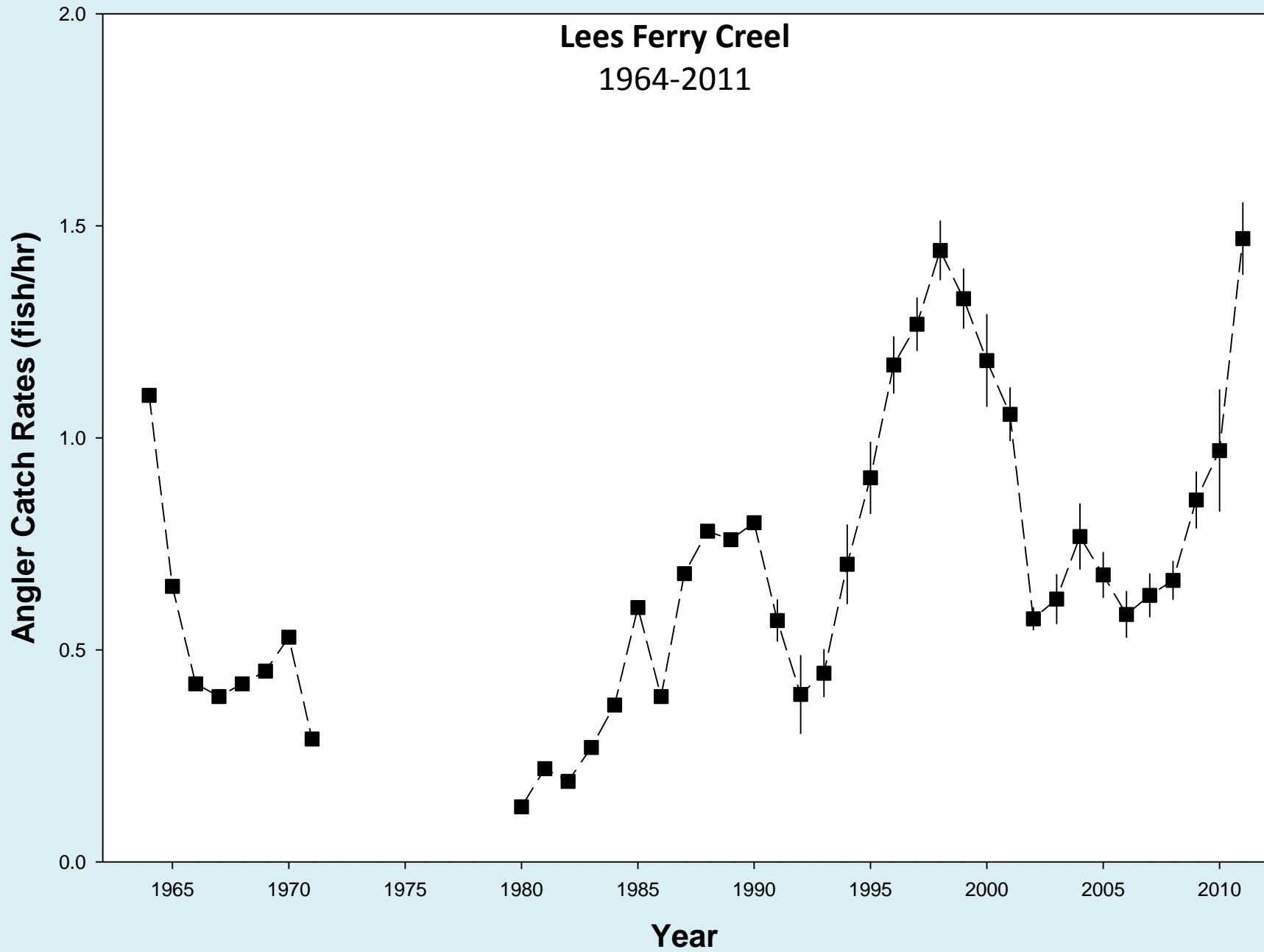


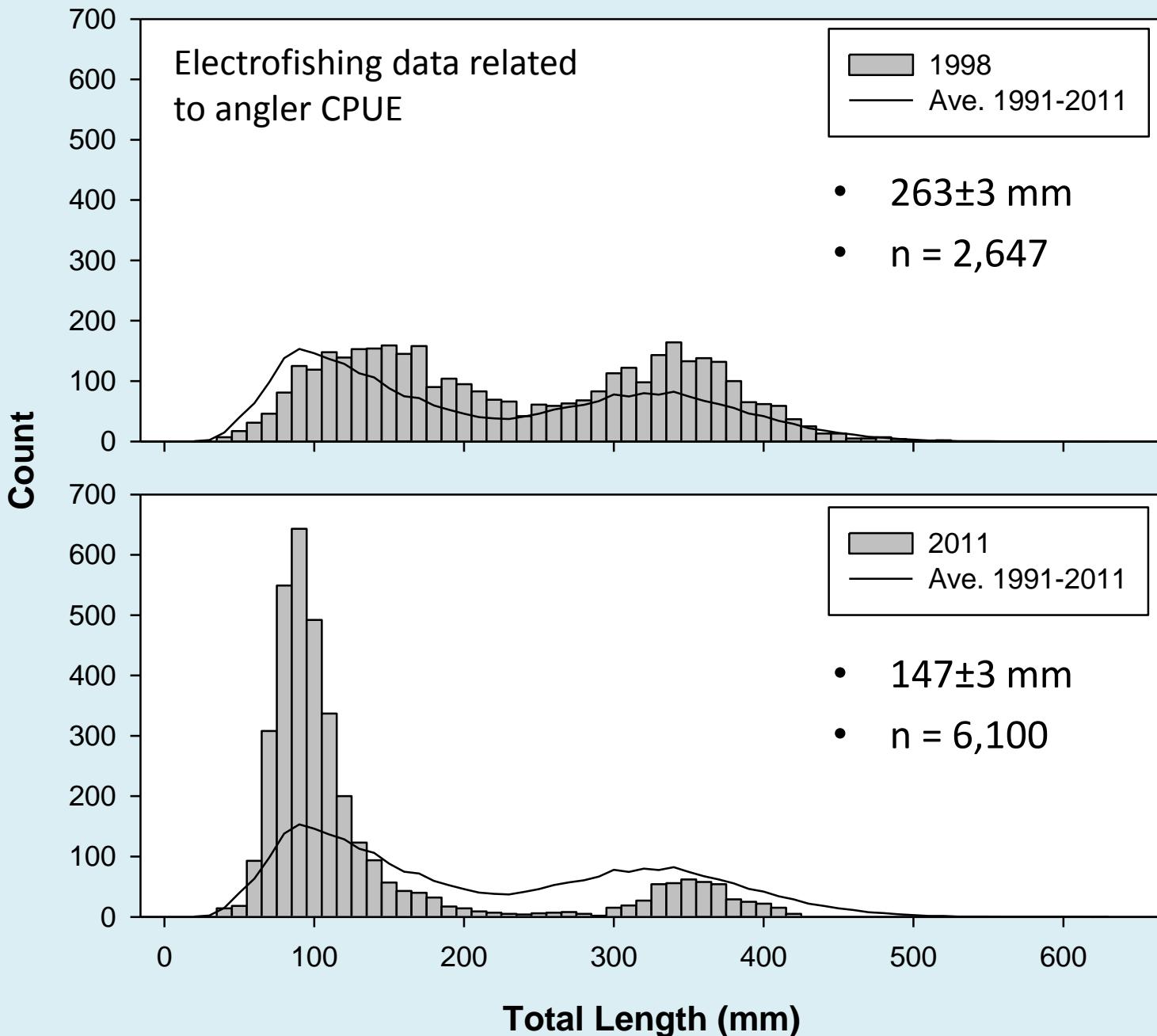
## Rare Nonnative Surveillance (July 2011)

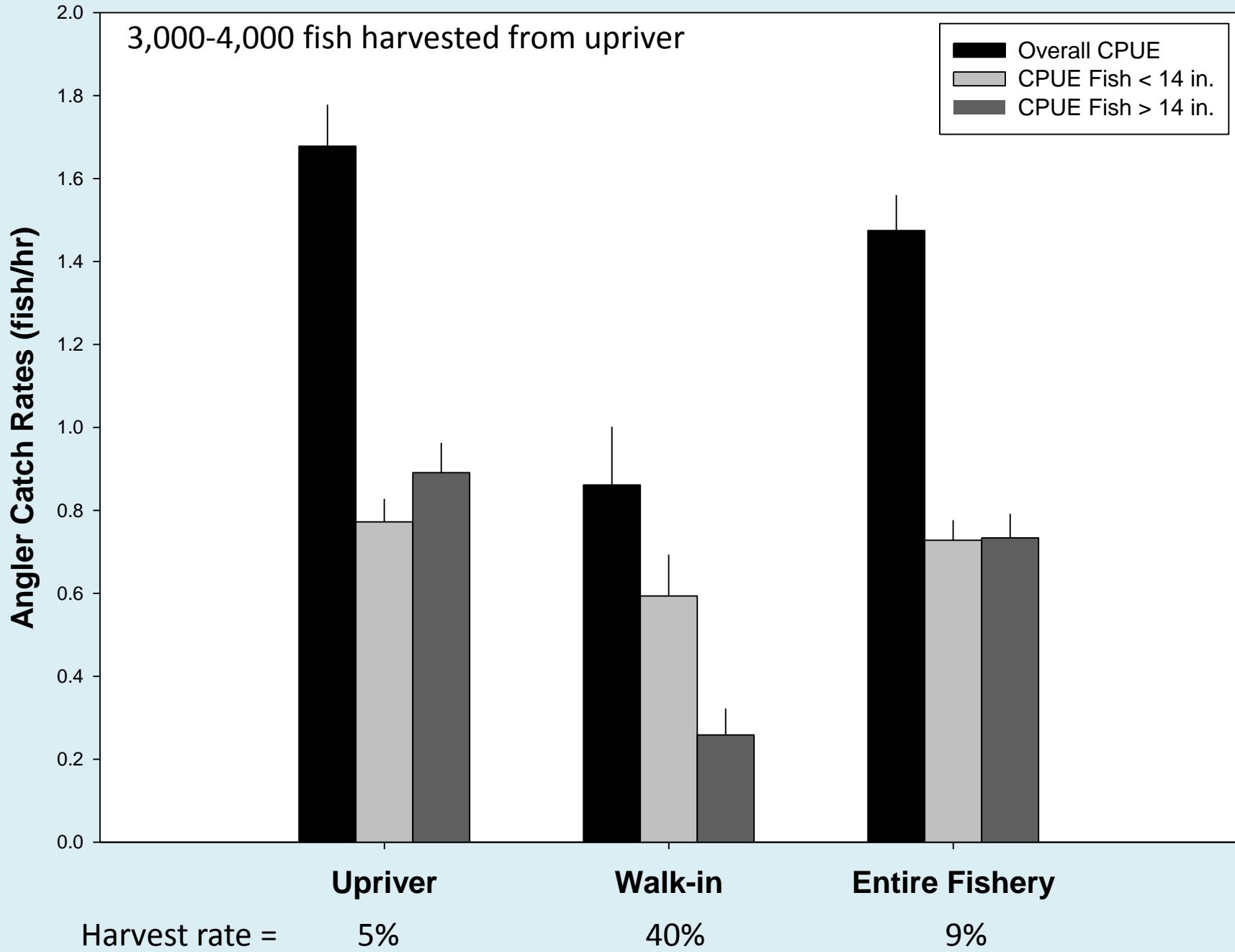
River Mile	Description	Effort (seconds)
-15.7 R	Below spillway, river right	1,362
-15.7 L	Below spillway, river left	851
-14.3 L	14-mile Spring	325
-14.0 R	Rocky shoreline habitat	320
-13.7 R	Spring inflow	300
-13.5 L	Spring inflow	300
-12.3 L	Large backwater known as the “slough”	3,446
-11.0 R	Below Ferry Swale bar	300
-10.9 L	Spring inflow	300
-6.9 L	Backwater Feature	340
-3.3 L	Warm Spring inflow	330
-1.5 L	Backwater Feature	330

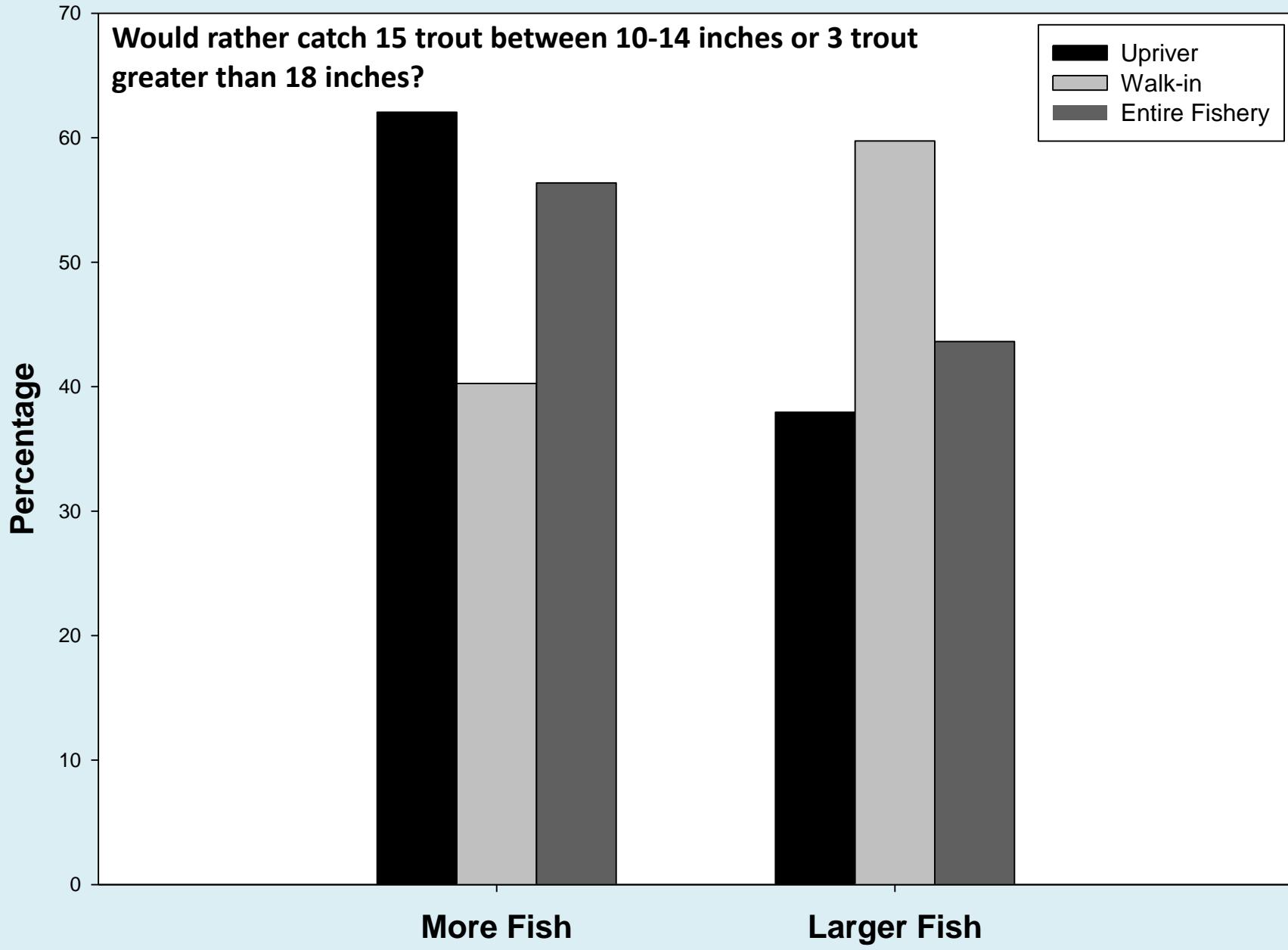
## Rare Nonnative Surveillance (July 2011)

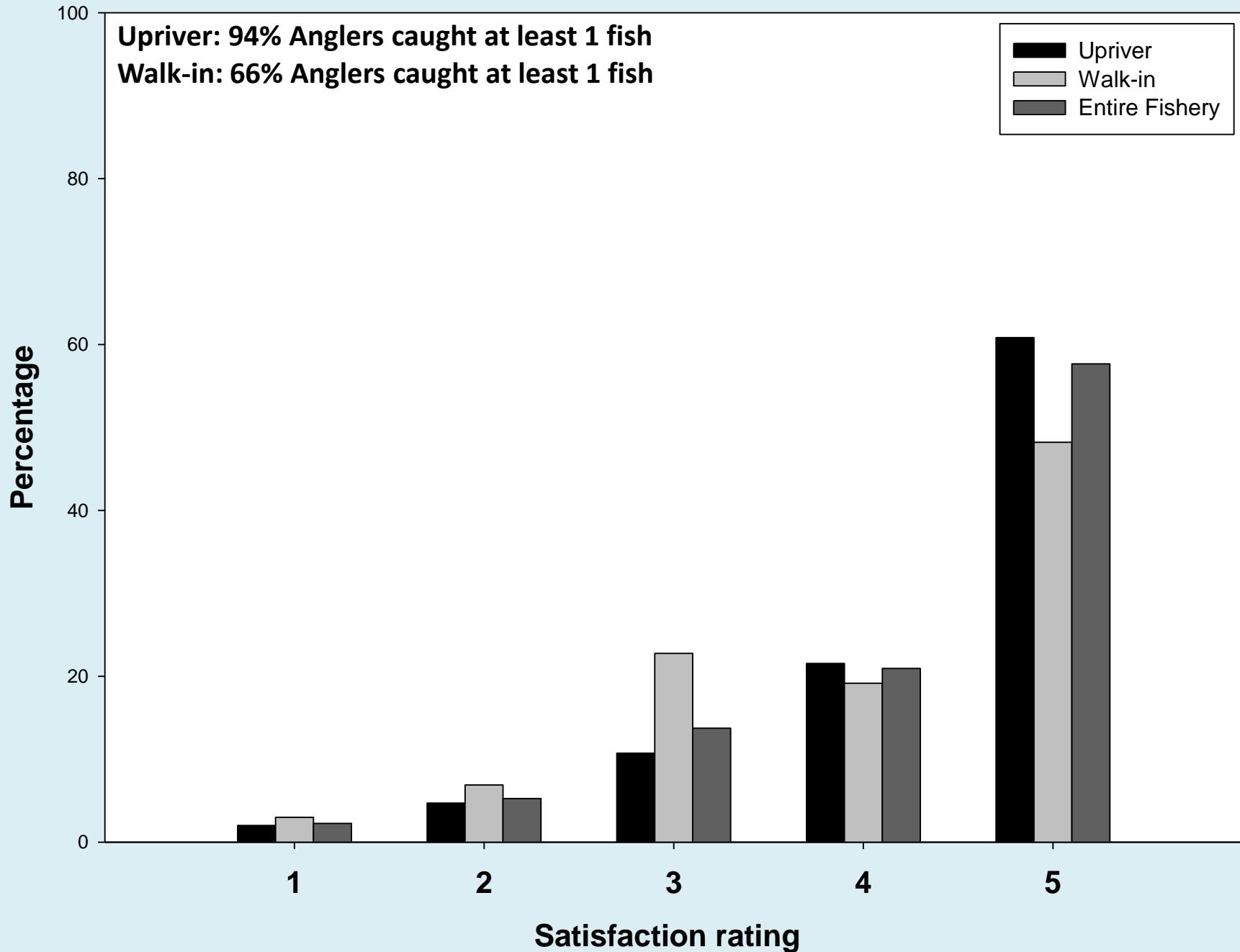
Fish Species	Standard Sampling	Rare Nonnative Surveillance
Rainbow trout	1,307	N/A
Common carp	0	63
Flannelmouth sucker	1	9
Walleye	0	7
Brown trout	2	1
Smallmouth bass	0	1











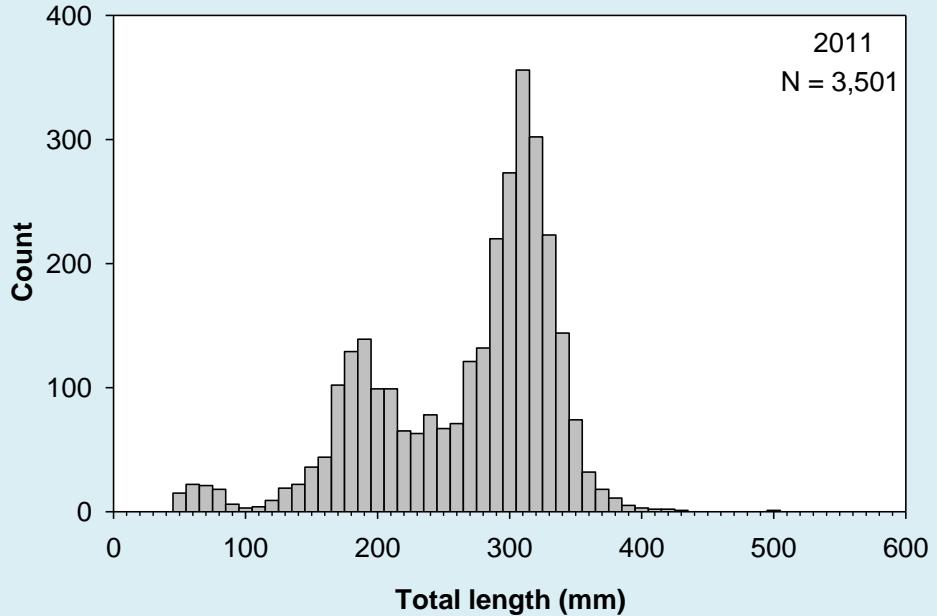
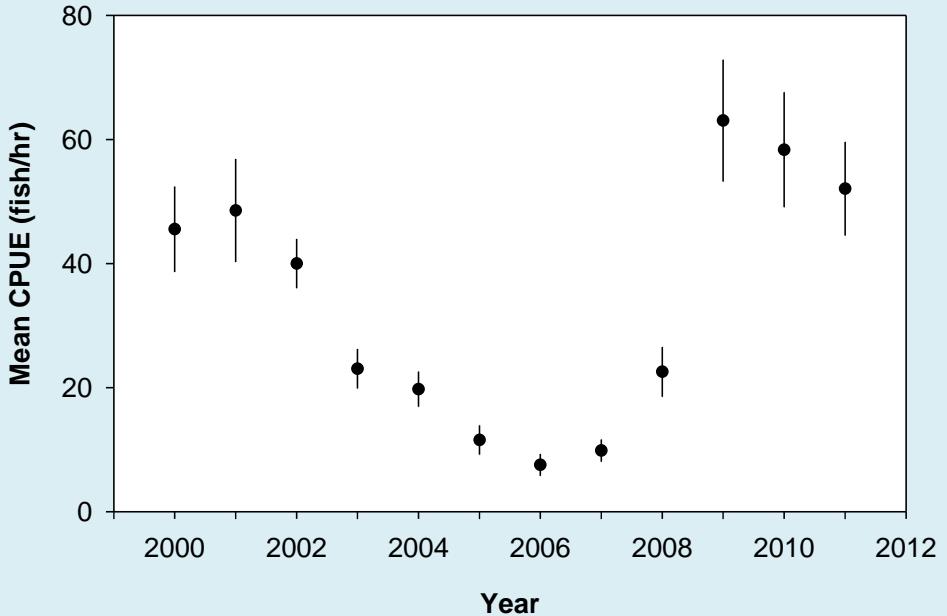
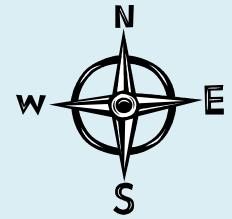
# Mainstem Fish Monitoring

- AGFD conducts 1-2 electrofishing surveys (2000-2011)
  - Spring (March-May)
  - 700-900 randomly selected transects
- Mark-Recapture Estimates
  - Cathedral Wash area (RM 1.8-2.9)
  - Bright Angel Creek confluence  
(RM 87.4-89.9)



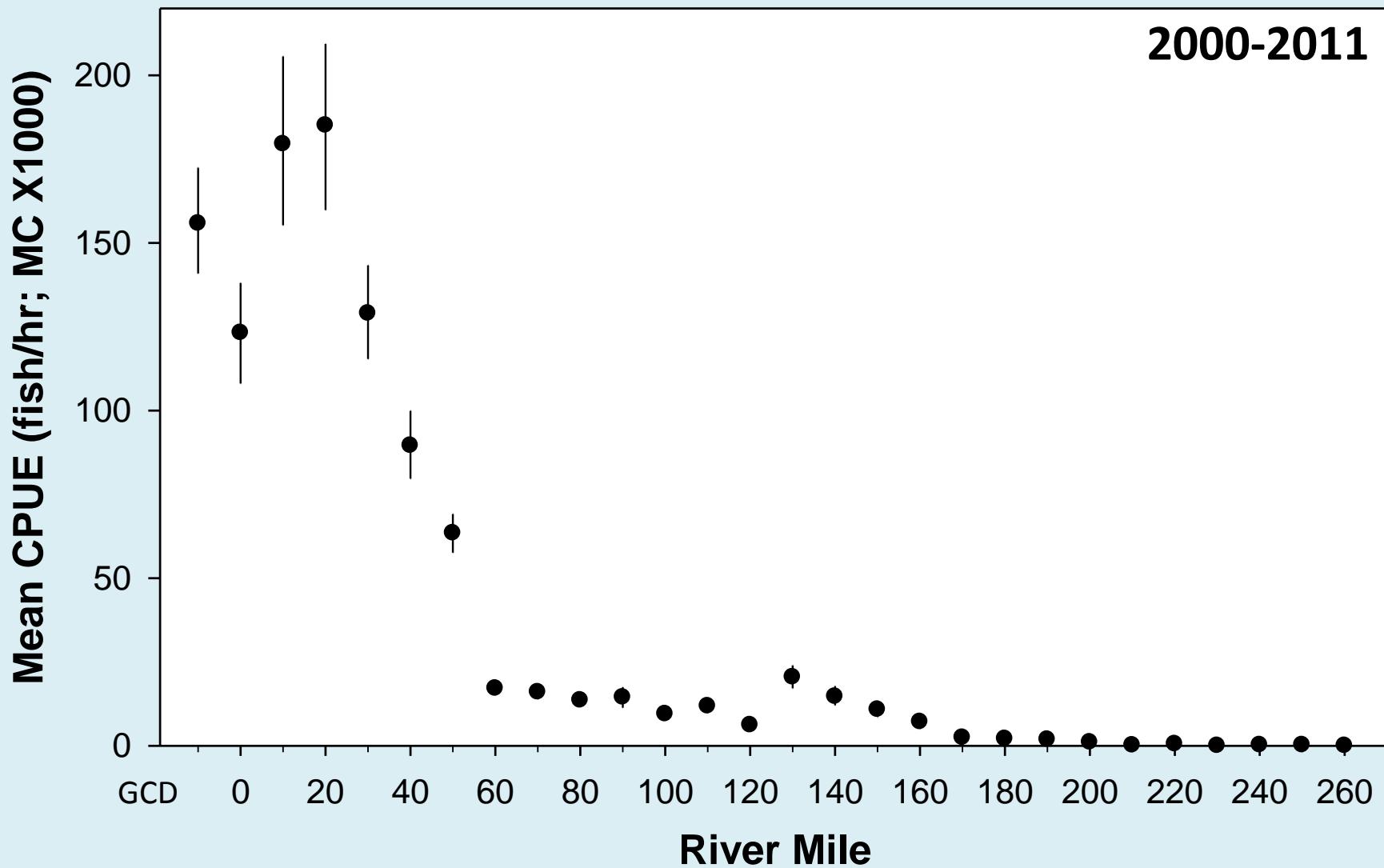
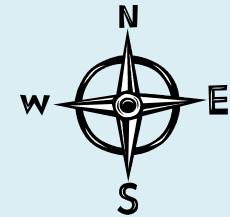


# Rainbow trout



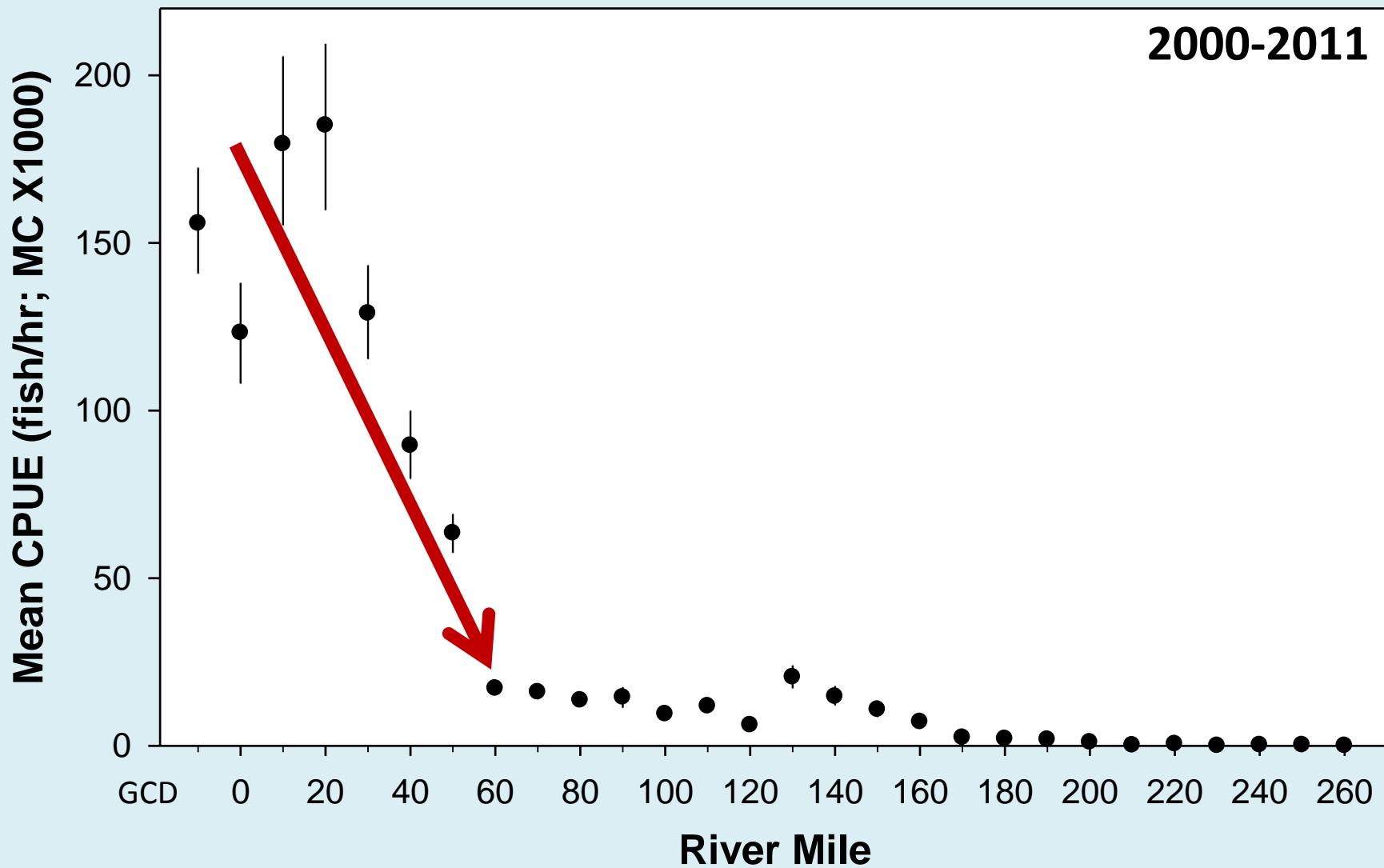
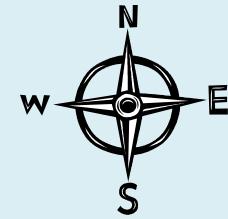


# Rainbow trout



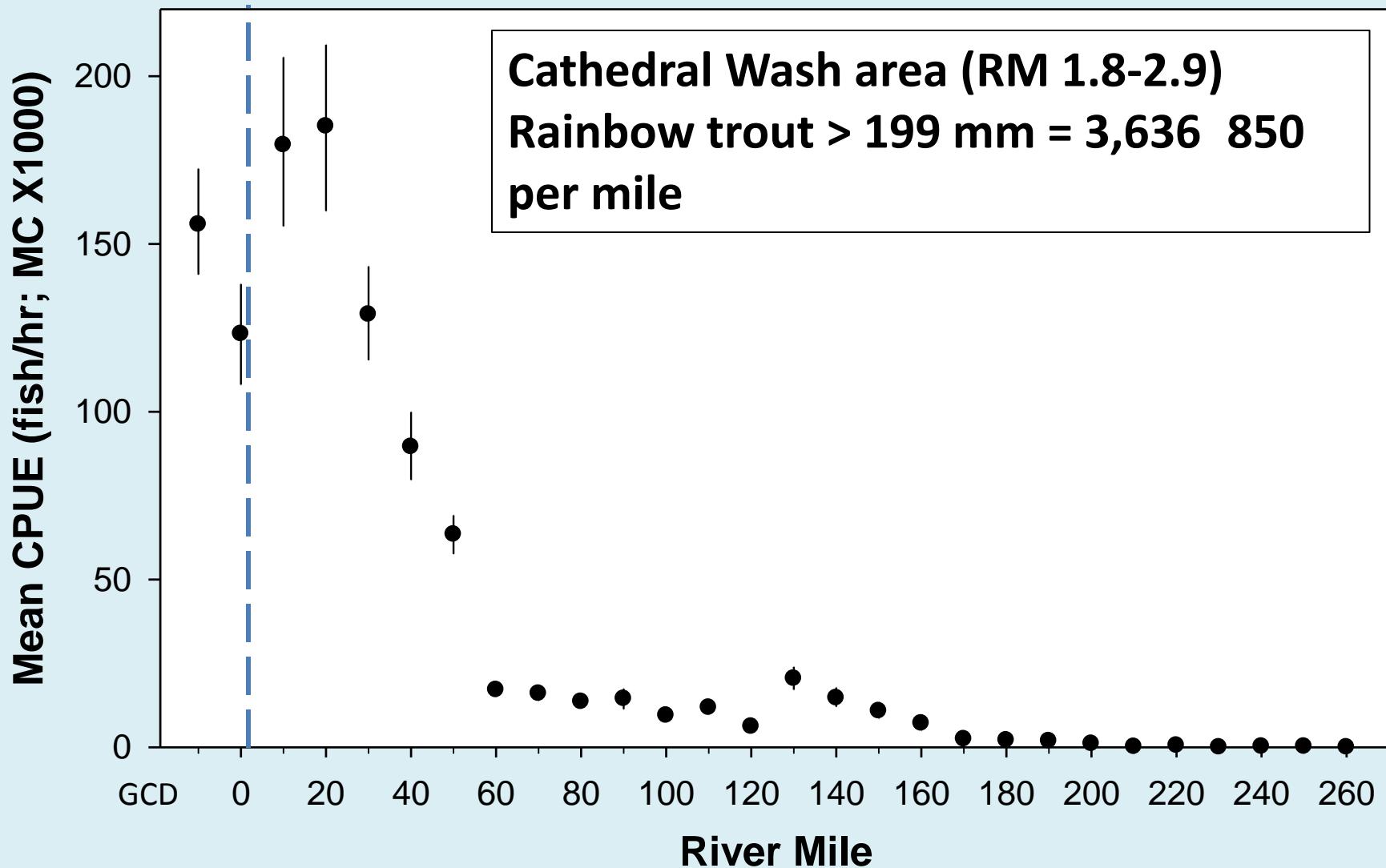
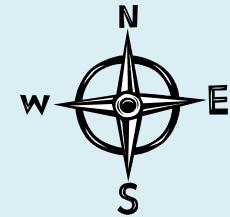


# Rainbow trout



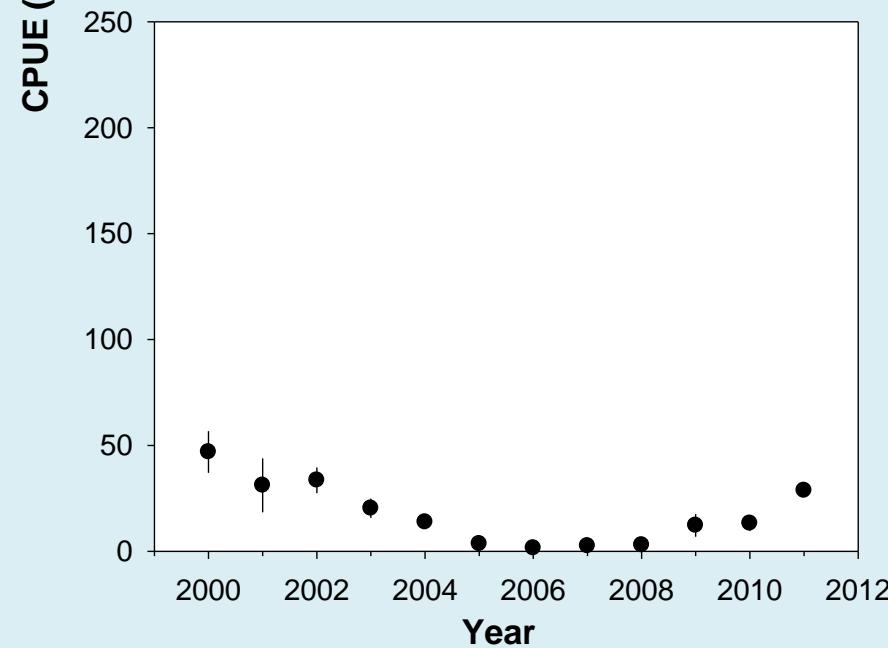
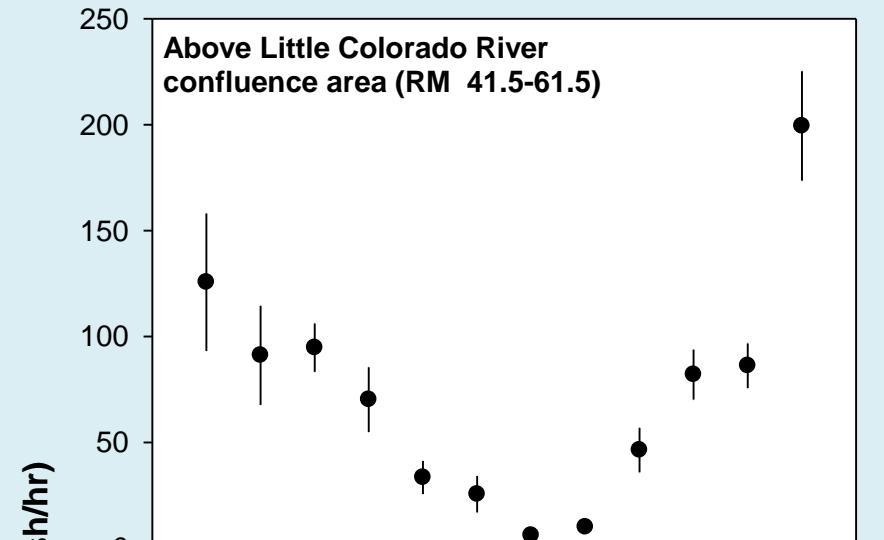
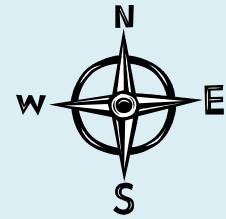


# Rainbow trout



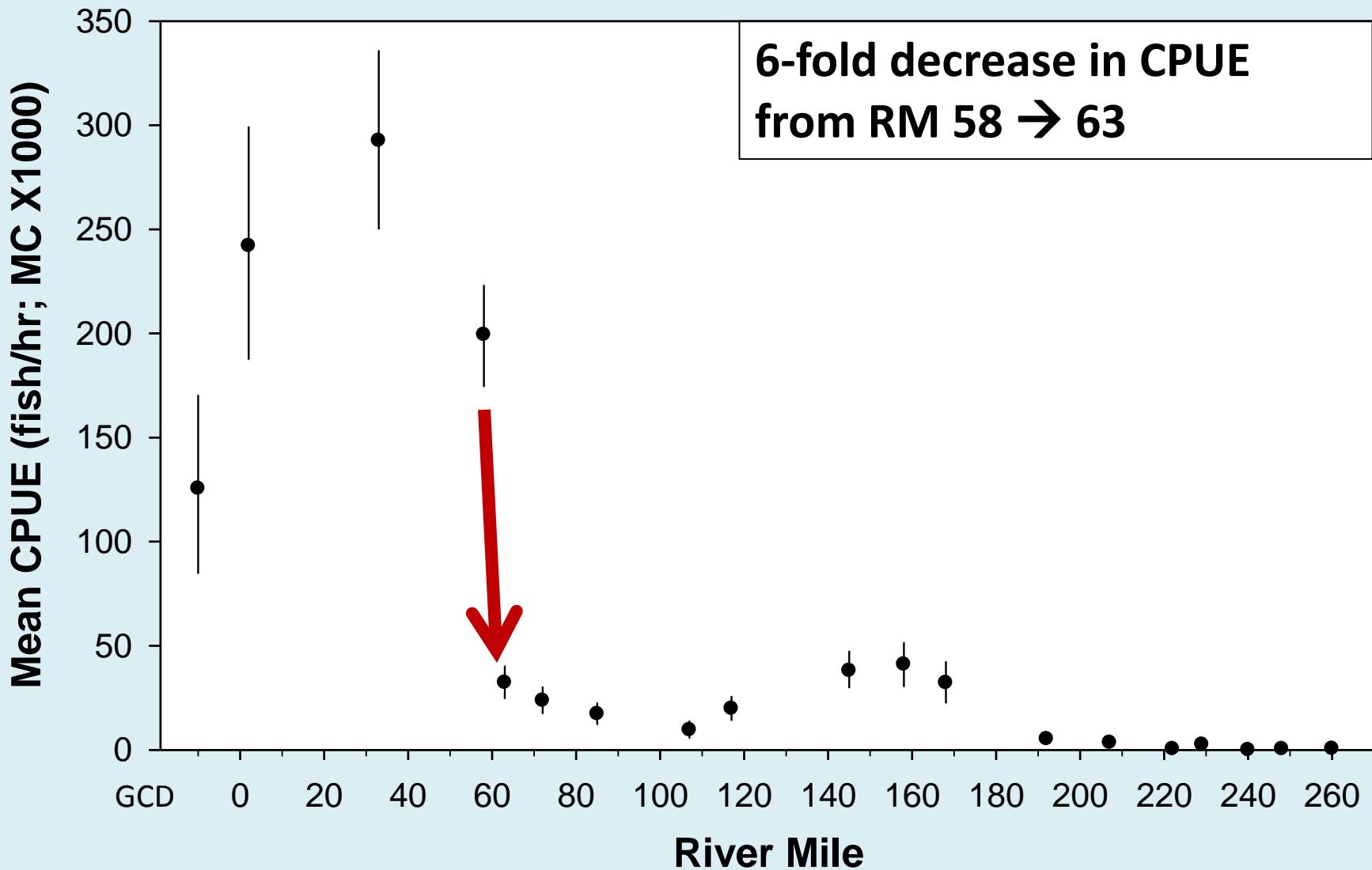
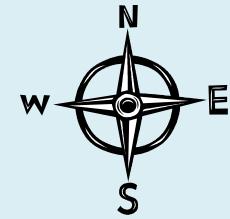


# Rainbow trout



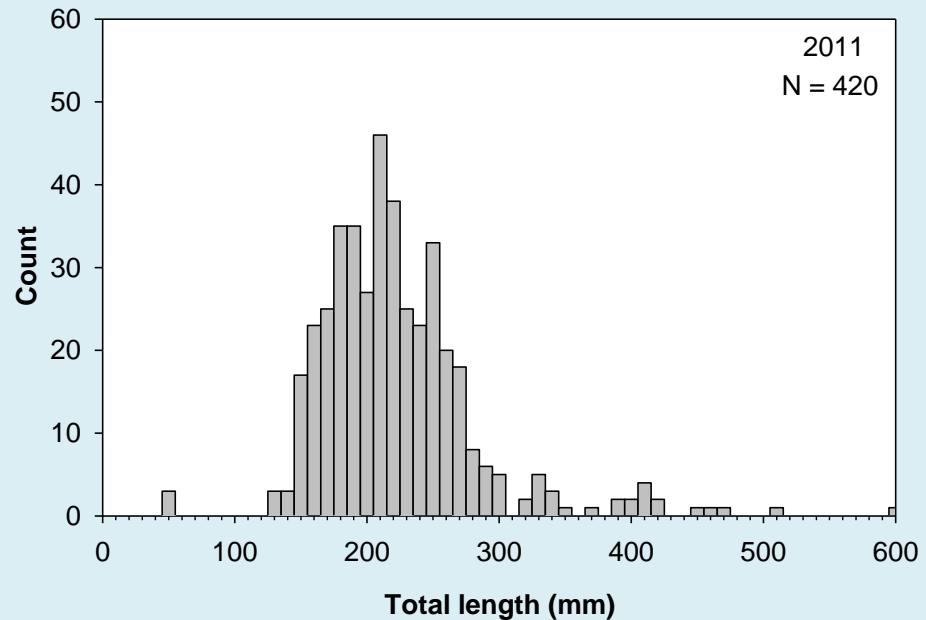
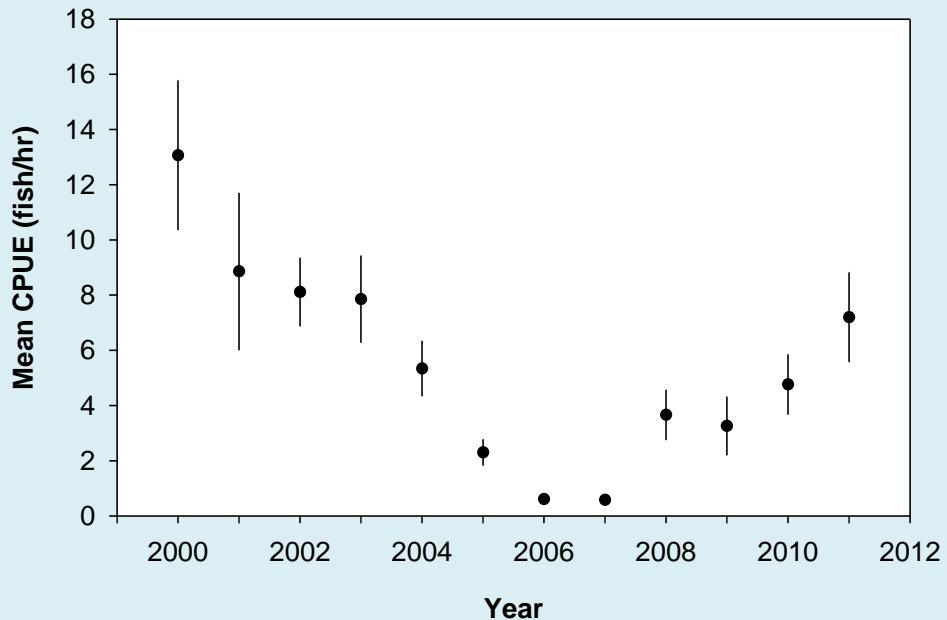
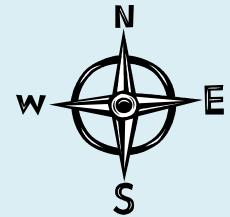


# Rainbow trout



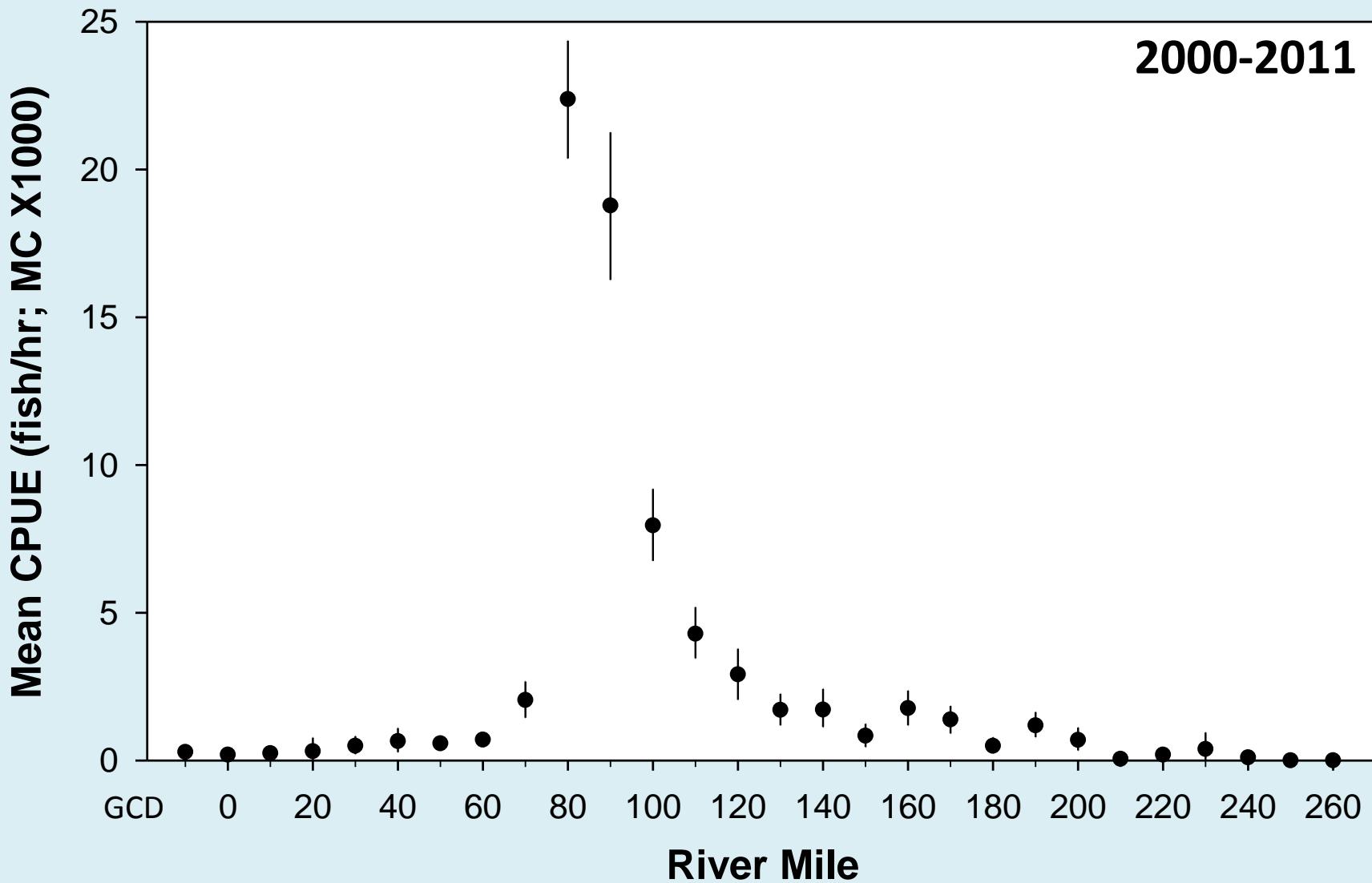
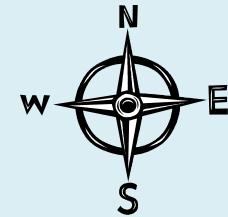


# Brown trout



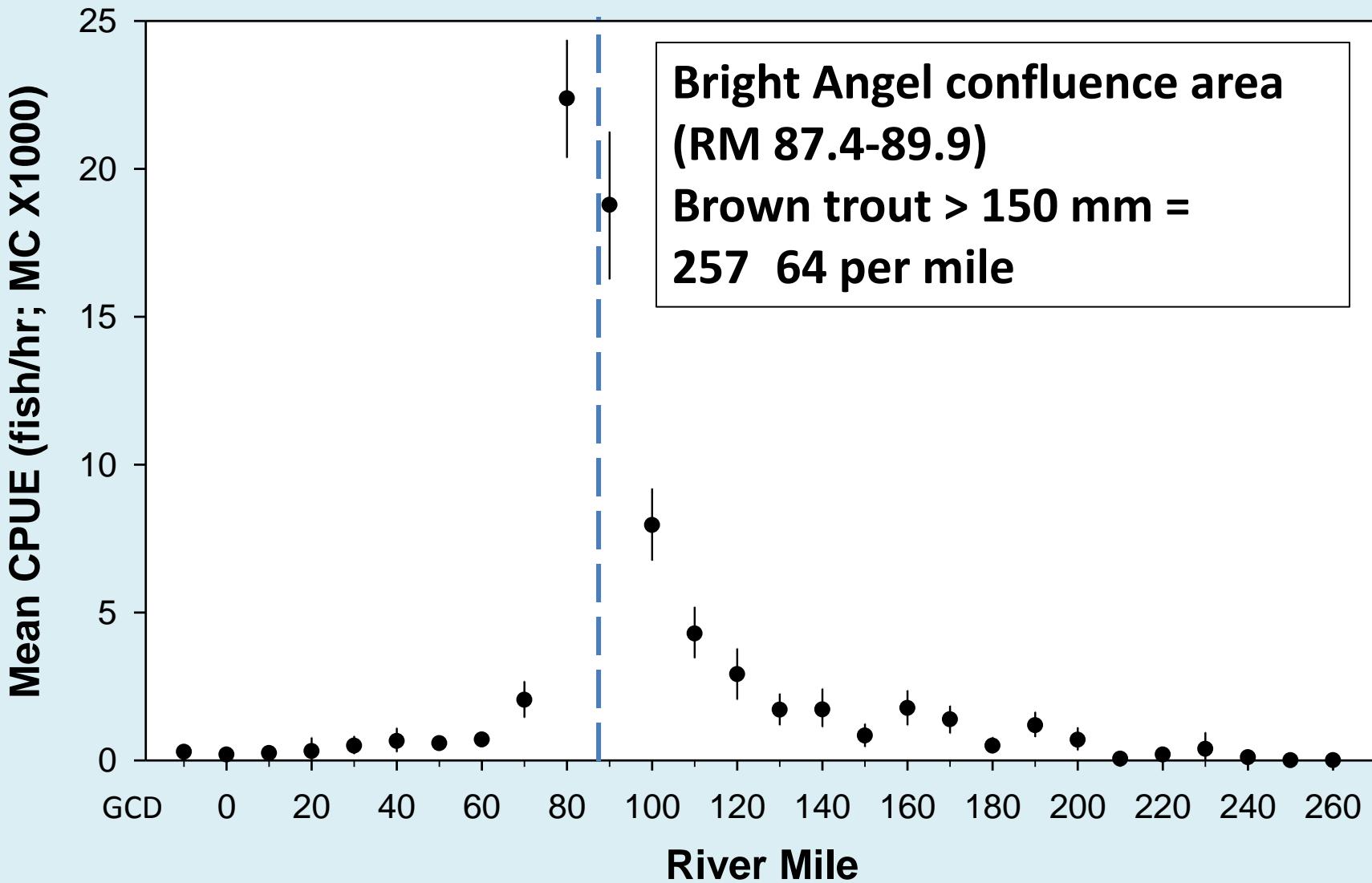
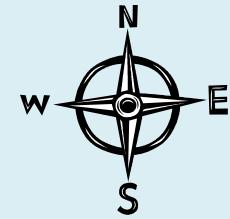


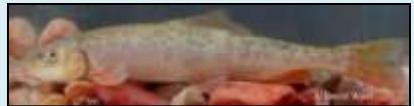
# Brown trout



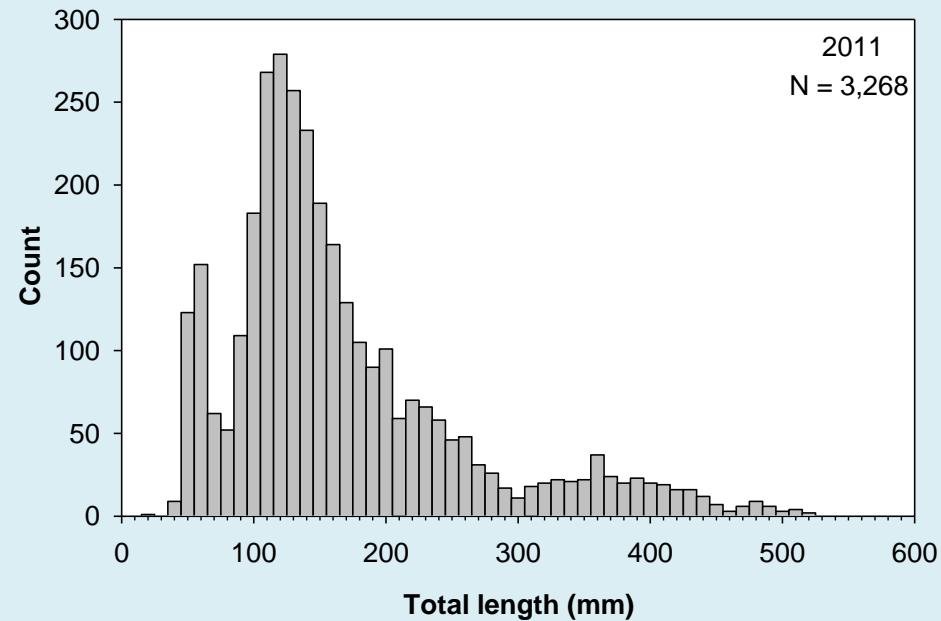
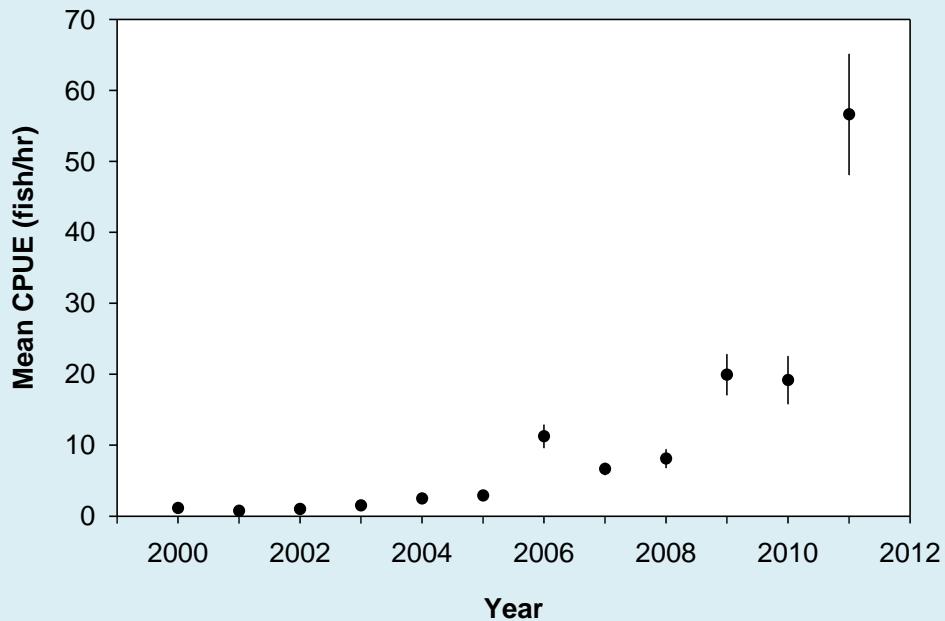
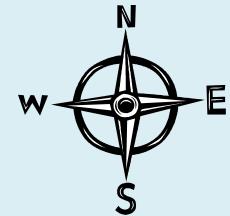


# Brown trout



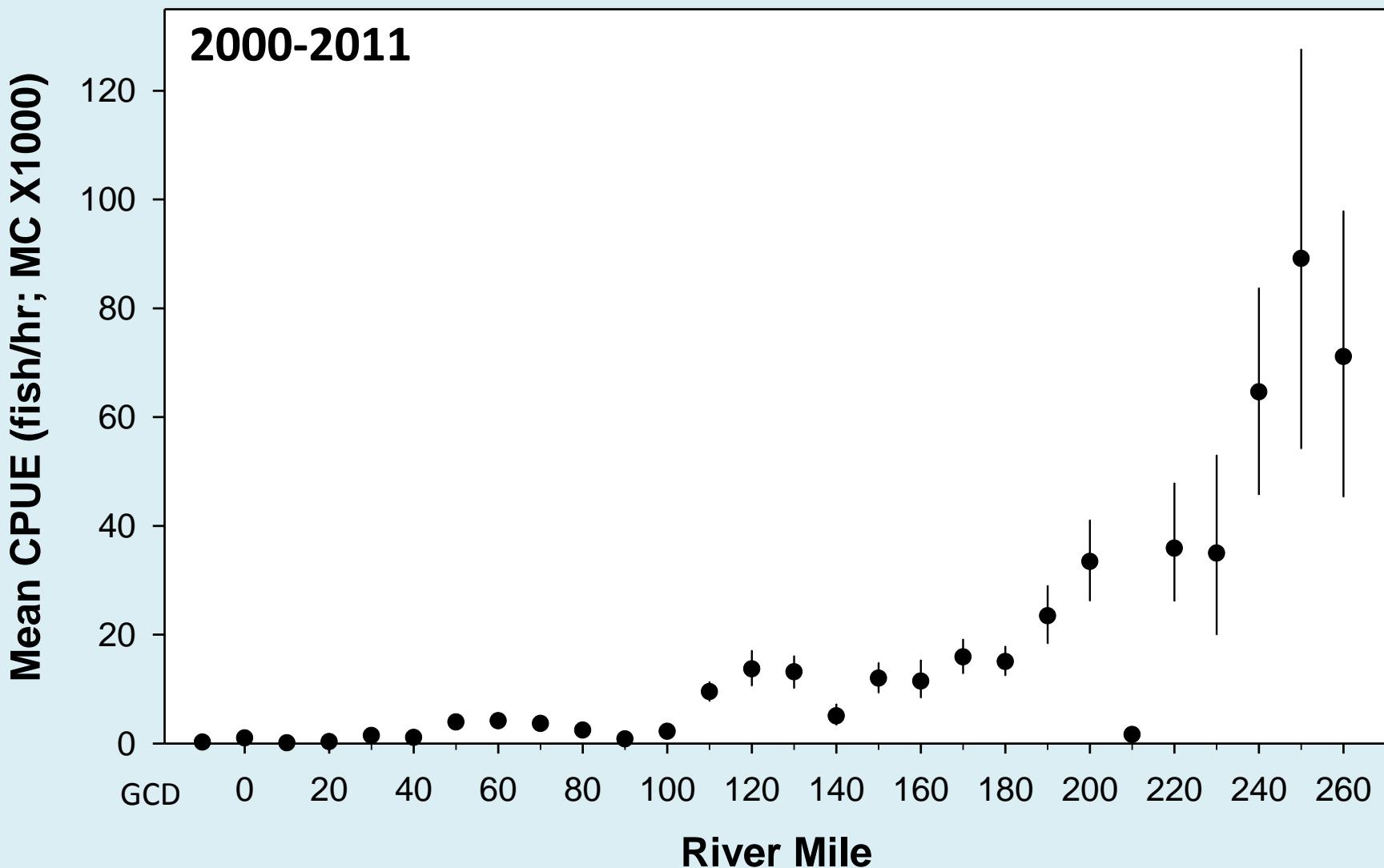
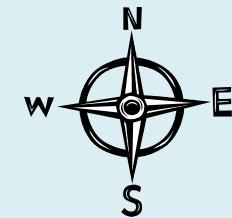


# Flannelmouth Sucker





# Flannelmouth Sucker





# Lees Ferry and Mainstem Fish Monitoring



## ■ Lees Ferry monitoring

- Fine scale population trends in response to flow regime
- Flow impacts on angler catch rates
- Presence-absence of rare nonnatives
- Directly ties to other projects: mainstem monitoring, natal origins, removals



# Lees Ferry and Mainstem Fish Monitoring



## ▪ Mainstem monitoring

- 2 trips very important for sample size (e.g., low fish abundance, turbidity)
- Trends in adult fish populations (both native and nonnative), size composition, species composition
- Explore capture probabilities to attain absolute abundance
  - Especially important for salmonid abundance near LCR
- Movement and growth information
- Modeling (e.g., Ecopath)
- Rare nonnative species detection
- Directly ties to other projects: Lees Ferry, LCR work, BA weir effects & connectivity, aggregation trips, natal origins, removals